

REMARKS/ARGUMENTS

In the Office Action mailed September 3, 2008, claims 1-3 and 5-8 were rejected. In response, Applicants hereby request reconsideration of the application in view of the below-provided remarks. No claims are amended, added, or canceled.

Withdrawal of Finality

As a preliminary matter, Applicants respectfully note that the present Office Action does not address any of the specific limitations of the dependent claims. Therefore, Applicants respectfully submit that the finality of the present Office Action is premature because the Office Action does not provide substantive reasoning for the rejections of all the claims. Accordingly, Applicants respectfully request that the finality of the present Office Action be withdrawn.

Claim Rejections under 35 U.S.C. 102

Claims 1-3 and 5-8 were rejected under 35 U.S.C. 102(e) as being anticipated by Dutta et al. (U.S. Pat. No. 6,963,890, hereinafter Dutta). However, Applicants respectfully submit that these claims are patentable over Dutta for the reasons provided below.

Independent Claim 1

Claim 1 recites “at least a first functional unit to perform a n-taps polyphase filtering and a second functional unit to perform a m-taps polyphase filtering, m and n being integers greater than or equal to two, wherein the functional units are able to receive in parallel data and coefficients coming from the memory device, and to calculate results from said data and coefficients and supply these results back to the memory device” (emphasis added).

In contrast, Dutta does not disclose first and second functional units to perform filtering, as recited in the claim. Dutta merely describes a single functional unit within a digital filter architecture that can be readily reconfigured to operate in any of a plurality of filtering modes. Dutta, col. 4, lines 12-15. In particular, Dutta describes a hardware

reconfigurable digital filter having selectable filtering modes. Dutta, col. 4, lines 18-21. The digital filter includes mode selection circuitry, logic circuitry, and computational circuitry. Dutta, col. 4, lines 21-23. The mode selection circuitry switches the digital filter between different multiple filtering modes depending on the particular application. Dutta, col. 4, lines 40-42. To illustrate this mode switching performance, Dutta provides two separate examples.

In one example, Dutta describes switching from a first filtering mode involving a high precision type of filtering to a second filtering mode involving a more common type of filtering operation. Dutta, col. 4, lines 42-48. In this example, the mode selection circuitry commands the orientation of the multiplication logic and addition circuits to reconfigure the digital filter for the two modes. Dutta, col. 4, lines 40-51. In other words, the mode selection circuitry controls how the hardware logic and circuitry within the digital filter is reconfigured, or physically changed, in order to switch from one filter mode to another.

In the other example, Dutta describes switching from one type of the more common filtering mode to another type of the more-common filtering mode. Dutta, col. 4, lines 64-66. Dutta states that the more common types of filtering modes include m-tap finite impulse response (FIR) and n-tap FIR filtering. Dutta, col. 4, line 66, through col. 5, line 2. In this example, the mode selection circuitry reconfigures the filter by controlling the orientation and communication of data between registers in the respective cells of the logic circuitry without changing the orientation of the multiplication logic and addition circuits in the computational circuitry. Dutta, col. 5, lines 3-15. In other words, the hardware configuration of the logic and circuitry within the digital filter is not changed, but the data stored in the registers is changed.

While the hardware-reconfigurable digital filter disclosed by Dutta can be reconfigured to perform different types of digital filtering modes, the hardware-reconfigurable digital filter can only perform one mode of digital filtering at a time. In order to perform two modes of digital filtering, the same digital filter is reconfigured to switch from one digital filtering mode to another digital filtering mode. Hence, Dutta merely describes a single digital filter, even though the same digital filter can be reconfigured to perform different types of digital filtering modes. Therefore, Dutta does

not disclose first and second functional units to perform filtering because Dutta merely describes a single digital filter.

One difference between an implementation that uses two separate function units to perform filtering, instead of a single hardware-reconfigurable digital filter, is that multiple filtering operations may be performed at the same time using separate functional units. In contrast, a single hardware-reconfigurable digital filter may be able to perform different types of filtering modes, but cannot perform the filtering modes at the same time or on separate data. For example, Dutta explains that the output from the first filtering mode must be reloaded as input for a second filtering mode, presumably after the hardware of the digital filter is reconfigured. Dutta, col. 6, lines 30-33. Thus, a two pass filtering operation takes data from the output of one mode of filtering and reloads the output as input for the second mode of filtering because the reconfigurable hardware digital filter disclosed by Dutta is only a single functional unit that can only perform one mode of filtering at a time.

For the reasons presented above, Dutta does not disclose all of the limitations of the claim because Dutta does not disclose multiple separate functional units to perform n-taps polyphase filtering and m-taps polyphase filtering, as recited in the claim. Accordingly, Applicants respectfully assert claim 1 is patentable over Dutta because Dutta does not disclose all the limitations of the claim.

Dependent Claims

Claims 2-3 and 5-8 depend from and incorporate all of the limitations of the corresponding independent claim 1. Applicants respectfully assert claims 2-3 and 5-8 are allowable based on allowable base claims. Additionally, each of claims 2-3 and 5-8 may be allowable for further reasons.

CONCLUSION

Applicants respectfully request reconsideration of the claims in view of the remarks made herein. A notice of allowance is earnestly solicited.

Respectfully submitted,

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